Computer-Assisted Support for Underserved Smokers

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Abbreviated Abstract

The project goal is to continue development of a practical, easily usable software system (SCSS) to assist physicians in providing smoking cessation counseling to their patients who smoke. This system, begun under an SBIR Phase I program, provides online, real-time assessment of a patient's smoking history, nicotine dependence, and relevant variables; produces a feedback report to the patient; and provides treatment guidelines for physicians. An efficacy study will be used to examine the relative utility of this system compared to a low-cost control in an A-B-A research design. It is anticipated that utilization of the SCSS system will (1) increase rates of physician intervention in smoking cessation and (2) increase quit attempts and cessation among patients. Testing will occur in an inner-city primary care clinic serving low-income and ethnic minority individuals. Testing at secondary sites across the United States will enhance representation of diverse ethnic groups. Focus groups will be conducted to obtain feedback from physicians and representatives of health care management organizations. Results will be used to finalize the software system and prepare collateral materials necessary for commercial production. Traditionally underserved populations are targeted because they present a challenge for treatment in that they have limited resources and access to preventive care.

Primary Investigator

Frederick R. Bock, B.S., BTTF, Inc., P.O. Box 607, Attleboro, MA 02703
Phone: (508) 641-3763
E-mail: FRBock@Bellatlantic.net

Research Team & Affiliations

Frederick Bock, Principal Investigator, BTTF, Inc.
Rosa Montiero, M.S., Project Health Educator
Raymond Niaura, Ph.D., The Miriam Hospital

Total Budget

$441,410

Research Objectives

AIMS

1) To continue development and refinement of the multilingual, multimedia "Smoking Advisory Expert System" (SCSS) software package.
2) To examine the efficacy of the SCSS software package for increasing cessation rates among patients in a primary care setting.

Theory/Hypothesis

The most widely used smoking cessation interventions in primary care settings are written materials (i.e., pamphlets, newsletters, booklets). These materials are relatively inexpensive and can supply a level of detail most health care personnel do not have the time or training to provide.

However, these materials present a number of significant drawbacks that limit their efficacy. They depend heavily upon the literacy level and language comprehension of the reader (usually in English). In addition, in order to present information to a broad spectrum of potential readers, these materials often contain long, dense messages that may contain many topics that are irrelevant to the needs of the individual reader. Computer expert systems offer the potential to individually tailor smoking cessation messages such that no irrelevant material is included in any individual's intervention materials. These systems can also retain the low-cost/high-disseminability advantages associated with standardized print materials.

Experimental Design

The study used an A-B-A research design comparing two conditions: (1) Standard Treatment (ST) for smoking cessation, with charted "smoking status vital sign," and (2) Enhanced Treatment (ET) for smoking cessation, with the SCSS program support.
The ST condition was implemented in Month 7. For 3 months, smoking participants were identified when they presented for an appointment with their physician. They completed the baseline questionnaire on the laptop computer, and a "smoking status vital sign" note was placed into the participant's chart prior to the physician visit. All participants engaged in an exit interview before leaving the clinic. All individuals wishing to quit were offered nicotine replacement (patch) and a self-help manual. At Month 10 of the project, the ET condition was implemented. For 3 months, smoking participants were identified when they presented for an appointment with their physician. They completed the baseline questionnaire on the laptop computer, and each participant was given an individualized feedback report produced by the SCSS software system. An accompanying physician report was attached to the patient's chart, along with the "smoking status vital sign" sticker. As in the ST condition, all subjects participated in an exit interview following the physician visit. All individuals wishing to quit were offered nicotine replacement (patch) and a self-help manual. In Month 13 of the project, we began the final 3-month ST procedure, which acted as a "washout" period in which we could examine whether there was any carryover effect from the use of the SCSS software system or whether physician intervention rates returned to baseline. All subjects were followed using mailed surveys at 1, 3, and 6 months post recruitment.

Final Sample Size & Study Demographics

A total of 48 subjects participated in the ST condition, 98 subjects participated in the ET condition, and 49 subjects participated in the ST procedure, for a total of 195 subjects. Twenty-four percent were male; mean age was 43.5 years. One-third (34.3%) were Hispanic, 51.3 percent were non-Hispanic White, 11.5 percent were African American, and 2.9 percent were of other mixed ethnicity. Most (71%) were born in the United States. One-third had less than 12 years of formal education, 23.9 percent had a high school diploma, and 14.5 percent were college graduates. Over one-third (35%) of subjects were single, 40 percent were married, 5 percent were living with a significant other, and 18.8 percent were divorced. No significant differences in demographic characteristics were observed between the ST and ET conditions.

Data Collection Methods

Baseline questionnaires, follow-up mailed questionnaires at 1, 3, and 6 months

Outcome Measures

Smoking status (measured with the Fagerstrom Nicotine Dependence questionnaire), Center for Epidemiologic Studies–Depression Scale, and Cohen Stress Scale.

Evaluation Methods

Using chi-square analyses, change scores and cessation rates were compared for patients in the ST versus the ET condition.

Research Results

At the 1-month followup, 85.6 percent of subjects returned followup assessments and 24.0 percent of these had quit (7-day point prevalence abstinence). At the 3-month followup, 80.5 percent returned surveys and 18.5 percent of subjects had quit. By the final 6-month followup, 78.9 percent had returned followup surveys, and 15.6 percent had quit. Analyses using the intention-to-treat model, in which nonrespondents are counted as active smokers, showed 20.5 percent, 14.9 percent, and 12.3 percent cessation rates at the 1-, 3-, and 6-month followups, respectively. Chi-square analyses showed that, compared to the ST condition, significantly more subjects in the ET condition had quit at the 1-month ($\chi 2$ [1]=3.84, $p<0.05$) and 3-month ($\chi 2$ [1]=3.84, $p<0.05$) followups. Differences between conditions were no longer significant at the 6-month followup assessment.

Barriers & Solutions

Product(s) Developed from This Research

Quit Rite**,** a software system to assist health care providers in providing smoking cessation counseling to their patients who smoke